

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1.-6. (Cancelled).

7. (Currently amended) The apparatus of claim 17, wherein said visual display ~~means~~ unit includes a plurality of individual displays corresponding in number to the number of possible values of said state signal.

8. (Currently amended) The apparatus of claim 17, wherein said visual display ~~means~~ unit includes an LCD device having a plurality of individually activatable units.

9. (Currently amended) The apparatus of claim 17, further comprising electrodes applied to the patient for deriving said heart potentials,
analog circuit means connected to said electrodes and including a preamplifier, an electronic filter and a main amplifier, and
digital circuit means including an A/D converter, a sample-and-hold stage, a memory which holds said normal distribution, and a microcontroller.

10. (Currently amended) The apparatus of claim ~~[[17]]~~ 9, wherein said microcontroller is adapted to generate a signal fed back to said preamplifier for controlling the gain thereof.

11. (Currently amended) The apparatus of claim ~~[[17]]~~ 9, wherein said microcontroller is adapted to generate a clock signal for controlling said A/D converter and said sample-and-hold stage.

12. (Currently amended) The apparatus of claim [[17,]] 9, further comprising a battery for powering said analog and digital circuit means, and means for generating a warning signal if the voltage of said battery falls below a predetermined value.

13. (Currently amended) The apparatus of claim 17, further comprising a means for ~~generating a~~ actuating said warning signal ~~generating means~~ if said state signal assumes a ~~critical value~~ state associated with a high risk of atrial fibrillation.

14. (Currently amended) The apparatus of claim [[17]] 12 wherein warning signal generating means includes a visual display adapted to operate in a flash mode.

15. (Currently amended) The apparatus of claim [[17]] 12, wherein the warning signal generating means includes an audio signal generator.

16. (Currently amended) A method for detecting atrial fibrillation, comprising

a) repetitively obtaining a plurality of groups of n successive RR intervals from a patient's heart potentials, n being a natural number greater than 1,

b) defining a plurality of points in an n-dimensional space of numbers, each point representing one of said groups of n successive RR intervals, to form a characteristic distribution of said points, and calculating a virtual electronic two-dimensional scatter plot based on said RR intervals,

c) comparing said characteristic distribution with at least one normal distribution derived from a healthy heart by electronically checking said scatter plot for the presence of a prescribed geometrical point structure, and

d) generating ~~at least one~~ a state signal representing the state of the heart from step c), said state signal ~~actuating a visual display and being capable of assuming one of~~ at least three values representative of at least three degrees of deviation of said characteristic distribution from said normal distribution, each value of the state signal actuating a different visual display unit.

17. (Currently amended) An apparatus for detecting atrial fibrillation by the method of claim 16, comprising

a) means for repetitively obtaining a plurality of groups of n successive RR intervals from a patient's heart potentials, n being a natural number greater than 1,

b) means for defining a plurality of points in an n-dimensional space of numbers, each point representing one of said groups of n successive RR intervals, to form a characteristic distribution of said points and calculating a virtual electronic two-dimensional scatter plot based on said RR intervals,

c) means for comparing said characteristic distribution scatter plot with at least one normal distribution scatter plot derived from a healthy heart by electronically checking said virtual scatter plot for the presence of a prescribed geometrical point structure, and

d) means for generating a state signal representing the state of the heart from said means c), said state signal ~~signals observable on a visual display on said apparatus and being capable of~~ assuming one of at least three values representative of at least three degrees of deviation of said characteristic distribution from said normal distribution, each value of the state signal actuating a different visual display unit.

18. (New) The apparatus of claim 17 which is battery powered and lightweight and portable such that it does not much bother a patient employing the apparatus during a measuring period.

19. (New) The apparatus of claim 8, wherein said LCD device displays a pie chart having four quadrants, each of three quadrants being a different visual display unit corresponding respectively to one of said three degrees of deviation of said characteristic distribution from said normal distribution, one quadrant corresponding to absence of risk of atrial fibrillation.

20. (New) The apparatus of claim 8, wherein said LCD device displays a graphical bar chart having four bars, each of three bars being a different visual display unit

corresponding respectively to one of said three degrees of deviation of said characteristic distribution from said normal distribution, one bar corresponding to absence of risk of atrial fibrillation.

21. (New) The apparatus of claim 17, further comprising a display unit consisting of at least four differently colored LEDs; one LED of which illuminates in the absence of risk of atrial fibrillation, each of the remaining LEDs corresponding to a state signal representative of one of at least three degrees of deviation of said characteristic deviation from said normal distribution.

22. (New) The apparatus of claim 21, wherein a green LED is lit when said apparatus detects no risk of atrial fibrillation, and a red LED is lit when said apparatus detects a highly likely occurrence of atrial fibrillation.

23. (New) The apparatus of claim 22 having four LEDs, two LEDs of which are other than red and green in color, one of said two LEDs being lit when risk of atrial fibrillation is likely and one being lit when atrial fibrillation is not very likely, each LED corresponding to a different state of risk, green representing no risk, and red indicating the highest risk level or the actual occurrence of atrial fibrillation.

24. (New) The apparatus of claim 17 which is battery powered and which further comprises a piezoelectric acoustic signal generator which emits sound if battery voltage is low.

25. (New) The apparatus of claim 22, wherein at least one LED flashes repeatedly if battery voltage is low.

26. (New) The apparatus of claim 25, wherein all LEDs flash repeatedly if battery voltage is low.